

REMARKS

By this Amendment, Claims 1-12 and 15-23 are pending in the application. Reconsideration of the rejections set forth in the Official Action is respectfully requested in view of the above amendments and the following remarks.

Drawing Objection

In response to the objection to Figure 6, a corrected Figure 6 is submitted herewith wherein the lead line for item 150 is shown extending to the bottom of Item 85.

Restriction Requirement

Applicants affirm their election with traverse of the subject matter recited in Claims 1-12 and 15-23 and also note that Claims 13, 14, and 24-31 have been withdrawn from consideration. Upon allowance of the claims, rejoinder of the non-elected claims is respectfully requested.

Rejections Under 35 U.S.C. §103

1. Claims 1-4, 6-9, 11, 12, 15, 16, 18-20, 22 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,676,805 to Tamura. The reasons for the rejection are stated on pages 3-7 of the Official Action. The rejection is respectfully traversed.

Regarding Claim 1, the Official Action alleges that Tamura discloses a substrate support comprising a ceramic member, a metallic heat transfer member overlying a ceramic member, and an electrostatic chuck having a support surface but acknowledges that Tamura does not expressly disclose the heat transfer member having a maximum thickness of about  $\frac{1}{4}$  inch.

The Official Action further alleges that:

"...,it would have been obvious to one skilled in the art that designing a thin (e.g.  $\frac{1}{4}$  inch) heat transfer member with a low thermal mass would quicken the change in temperature of the heat transfer member. Alternatively, it would have been obvious to one skilled in the art to understand that the thin heat transfer member would have a faster change in temperature provided a small

flow rate than the thick heat transfer member, if a broader range of inlet temperatures of the liquid were allowed. Also, many heat transfer member design parameters are not considered within the specification. Therefore, the heat transfer member having a maximum thickness of about  $\frac{1}{4}$  inch portion of Claim 1 lacks criticality".

As discussed at MPEP § 2141.02, "[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious."

As explained in ¶49 of the present application, "[t]he substrate support 40 can provide dynamic, close temperature control, which is useful for various vacuum semiconductor processes. For example, these characteristics are useful for accurate, step-changeable temperature control in gate and shallow trench isolation ("STI") etching processes. The substrate support 40 temperature can alternatively be ramped (e.g., linearly) to form tapering sidewalls in substrates during etching, for example." Thus, with the arrangement set forth in Figures 2-6 of the present application, it is possible to achieve dynamic, close temperature control due to the thin metallic heat transfer member including at least one flow passage through which a liquid can be circulated.

Applicant submits that Tamara provides no disclosure of dynamic, close temperature control nor does Tamara provide motivation for use of dynamic temperature control. Furthermore, Tamara teaches away from dynamic temperature control in that Tamura states that "...the coolant is recirculated in the coolant flow passage to control the temperature of the holding member 2 and the dielectric material 18 at a given temperature." (column 15, lines 41-47, emphasis added). Tamura discloses a holding member 2 of large thickness and slow temperature response. Clearly, Tamura fails to provide any motivation to decrease the size of member 2 to  $\frac{1}{4}$  inch or less.

Furthermore, as discussed in MPEP § 2143: "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference... . And

in MPEP § 2143.01, Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art."

As explained above, Tamura, the cited prior art, clearly fails to provide some suggestion or motivation, to modify the member 2 to achieve a heat transfer member of thickness less than  $\frac{1}{4}$  inch.

As discussed at MPEP § 2144.03:

"Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute".

To the extent the Official Action has taken judicial notice that those skilled in the art would have been motivated to design a thin (e.g.  $\frac{1}{4}$  inch) heat transfer member with a low thermal mass to quicken the change in temperature of the heat transfer member, the Examiner is requested to cite a prior art reference in support of Examiner's contention. Furthermore, to the extent the Official Action has taken judicial notice that those skilled in the art would have found it obvious to understand that the thin heat transfer member would have a faster change in temperature provided a small flow rate than the thick heat transfer member, if a broader range of inlet temperatures of the liquid were allowed, the Examiner is again requested to cite a prior art reference in support of Examiner's contention.

Regarding Claim 15, the Official Action takes the position that "Tamura discloses ... the heat transfer member including at least one flow passage in fluid communication with the liquid source and through which the liquid can be circulated to heat and/or cool the heat transfer member at a rate of from about 0.25-2 °C/sec (Fig. 9, Item 2, Column 15 Lines 41-47)". However, there is no basis for the alleged disclosure in Tamura. Tamura clearly does not disclose the claimed heat transfer

rate. Accordingly, Claim 15 is clearly patentable over Tamara. Withdrawal of this ground of rejection is respectfully requested.

Dependent Claims 2-4, 6-9, 11, 12, 16, 18-20, 22 and 23 are patentable over U.S. Patent No. 6,676,805 to Tamura for at least the same reasons as those discussed above regarding Claim 1.

Claims 10 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tamura in view of Kanno (U.S. 6,373,681). The reasons for the rejection are stated on page 8 of the Official Action. The rejection is respectfully traversed.

Dependent Claims 10 and 21 are patentable over Tamura in view of Kanno for at least the same reasons as those discussed above regarding Claim 1 and Claim 15.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tamura in view of Oda (U.S. 6,474,986). The reasons for the rejection are stated on pages 8 and 9 of the Official Action. The rejection is respectfully traversed.

Dependent Claim 5 is patentable over Tamura in view of Oda for at least the same reasons as those discussed above regarding Claim 1 and Claim 15.

Claims 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tamura in view of Yang (U.S. 6,635,580). The reasons for the rejection are stated on pages 9 and 10 of the Official Action. The rejection is respectfully traversed.

Dependent Claim 17 is patentable over Tamura in view of Yang for at least the same reasons as those discussed above regarding Claim 1 and Claim 15.

In summary, the Official Action has failed to establish a *prima facie* case of obviousness regarding the plasma processing apparatus recited in Claims 1-12 and 15-23. See MPEP § 2143. Therefore, Claims 1-12 and 15-23 are patentable.

Conclusion

For the foregoing reasons, allowance of the application is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted at the number given below.

Respectfully submitted,

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**AMENDMENTS TO THE DRAWINGS:**

In response to the objection to drawings, submitted herewith is new corrected drawing Figure 6.